



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/686,198	10/15/2003	Eric J. Horvitz	MS158283.2 / MSFTP293USA	5905
27195 7590 07/09/2007 AMIN. TUROCY & CALVIN, LLP 24TH FLOOR, NATIONAL CITY CENTER 1900 EAST NINTH STREET CLEVELAND, OH 44114			EXAMINER CHEUNG, VICTOR	
			ART UNIT 3714	PAPER NUMBER
			MAIL DATE 07/09/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/686,198

Applicant(s)

HORVITZ ET AL.

Examiner

Victor Cheung

Art Unit

3714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-59 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25-59 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Amendments filed 2/23/07 have been entered. Claims 25, 48, and 58 have been amended.
Claims 25-59 are now pending.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The abstract of the disclosure is objected to because it is greater than 150 words in length.
Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 25-44, 46-47 and 58 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 25-44, 46 and 47 are directed toward a "computer implemented... system," which describes a system that is implemented in some manner with a computer, reasonably construed as a computer program. Since a computer program is merely a set of instructions capable of being

Art Unit: 3714

executed by a computer, the computer program itself is not a process and without a computer-readable medium needed to realize the computer program's functionality, the program is treated as nonstatutory functional descriptive material. For a computer program to be statutory under 35 U.S.C. 101, the computer program must be encoded on a computer readable medium, to impart functionality to a computer.

Claims 25, 28-44, 46, 47, and 58 are rejected under 35 U.S.C. 101 because no useful, concrete and tangible result is found. While the result of predicting a set of values for an unknown attribute is useful and concrete, there is no tangible result present. The result of predicting a set of values is not tangible because the values are only a set of data that is the result of a series of data manipulation. There is no tangible application of the predicted results. It would appear, however, that the recommendation facilities of claims 26 and 59, which provide the user with recommendations, would resolve the "tangible" deficiency of claims 25 and 58, respectively.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 25-34, 36-44, 46-55, and 57-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robinson (US Patent No. 5,884,282) in view of Altschuler et al. (US Patent No. 6,012,052).

Robinson discloses a computer implemented collaborative filtering system (Col. 3, Lines 14-27, 62-65).

With regard to claims 25, 48, and 58, and the limitation of a personality type generator that analyzes known attributes relating to a user and determines the user's personality type when compared to substantially similar to personality types of disparate users, wherein the personality types of the plurality of disparate users are based at least in part upon attributes related to the users, Robinson discloses analyzing a user's preferences or ratings for an item (i.e., attributes) and using probability values to make recommendations to users with similar preferences (i.e., personality types) (Col. 2: 10-57).

With regard to the limitation of an attribute value predictor that predicts unknown attributes relating to the user based at least in part upon the calculated probabilities, Robinson discloses providing recommendations to a user, based on the user's previous ratings (Co. 2:34-39). The unknown attribute, in this case, is the user's rating or preference of the recommended item. Since the user has not provided a rating for the recommended item, the user's preference (i.e., attribute) is unknown. Therefore, the system predicts that a user will prefer a recommended item (i.e., predicts an unknown attribute relating to the user). This is performed, based at least in part of calculated probabilities (Col. 2: 26-31). Robinson also discloses that the attribute predictor determines a set of values for each unknown attribute (Col. 14, Lines 53-56; Col. 16, Line 59-Col. 17, Line 8).

It is noted that Robinson does not employ the exact term "personality type" in disclosing the invention. However, Robinson discloses the feature of a user's preferences or ratings for items (Col. 1: 21-26; Col. 2: 10-26). The applicant's specification recites that a user's preferences may be

interpreted as a manifestation of their personality type (p. 15, lines 7-10). The specification additionally recites that a personality type may be comprised simply as a vector of a user's ratings or preferences for items in a database (p. 15, lines 10-12). Hence, it is inherently known that Robinson discloses the personality types as applicant defined.

However, Robinson does not specifically disclose calculating a probability that the user has a personality type, and using the probability for each personality type in the attribute predictor.

Altschuler et al. teach a system for collaborative filtering (Col. 5, Lines 12-18) including determining the probability that a user belongs to a specific cluster of users and determining a resource to provide the user based on the probability of each cluster (Col. 31, Lines 7-40), clusters representing groups of similar users.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the probabilities that a user has a personality type in predicting unknown attributes such that the user is provided with a more personalized prediction. Since each user is possibly unique from all current and previous users, it is obvious that the user may belong to a plurality of personality types to a degree determined by the probabilities.

With regard to claims 26 and 59, and the limitation of a recommendation facility that provides recommendations to the user based at least in part upon the predicted attributes, Robinson discloses this feature, as previously described (Col. 2: 34-36).

With regard to claims 27 and 29, Robinson discloses that, prior to presenting a recommendation to a user, different types of questions may be presented, such as ratings questions, or simple short answer questions, which vary in the degree to which they are intrusive to the user

(Col. 30: 4-19). Thus, the invention of Robinson inherently includes the capability of measuring the cost of disturbing a user. Additionally, the benefit of recommending a product or service to a user is higher if the projected rating of the user for that item is high (Projected rating concept described previously). Robinson discloses that if a user's predicted (projected) rating for a movie is high, then that particular movie should be recommended to the user. If the projected rating is too low, then the user should not be recommended the movie (Col. 13: 9-23). Therefore, the benefit of providing a recommendation to a user is determined, before a recommendation will be made. As an example, if a user were projected to rate a specific movie poorly, and the system were to recommend that movie to the user, the user would obviously not appreciate the recommendation. Such a recommendation could be considered an annoyance to the consumer, since no consumer wants to receive recommendations for a movie they most likely wouldn't enjoy. Therefore, the invention of Robinson inherently includes the capability of measuring the cost of disturbing a user (i.e., presenting a recommendation for an item that the customer may or may not want, depending on his or her projected rating for that item) against the benefit of providing a recommendation to a user (i.e., a customer would be more likely to purchase an item if his or her projected rating is favorable for the item), prior to presenting a recommendation to a user.

With regard to claim 28, and the feature of a query facility that requests an attribute from the user, Robinson discloses that a user may provide ratings (i.e., attributes) via a keyboard, touch screen, or other means (Col. 3:62 - Col. 4: 6; Col. 6: 37-40).

With regard to claims 30 and 50, and the limitation the query facility employs expected value of information in connection with requesting the attribute from the user, Robinson discloses

generating projected (i.e., expected) ratings of users (Col. 15:59 - Col. 16: 12). Robinson discloses the feature of predicting the possible ratings a specific user may provide, based on inferences with regard to other users with similar preferences (Col. 14: 1-8).

With regard to claims 31 and 51, Robinson discloses the feature wherein attributes are selectively requested from the user based upon one or more of a discriminatory value of information (i.e., items) relating to the user and a consideration of a likelihood that the user is familiar with items being asked about given uncertainty about the user, Robinson discloses generating projected ratings (Col. 2: 42-48).

With regard to claims 32 and 52, Robinson discloses selectively requesting attributes from the user based upon a discriminatory value of the information, including an analysis of a consideration of a likelihood of different answers to a query given uncertainty about the user (Col. 8: 36-67).

With regard to claim 33, and the feature wherein the personality types of the plurality of disparate users are generated using at least known attributes relating to each of the disparate users, Robinson discloses that the user preferences for items (i.e., personality types) are generated based on user ratings for items (i.e., known attributes), as previously described.

With regard to claim 34, and the feature wherein the known attributes relating to the plurality of disparate users are accessible from a data table, Robinson discloses that the user ratings (i.e., attributes) may be stored in a database (i.e., data table) (Col. 6: 35-40).

With regard to claims 36 and 37, Robinson discloses known attributes relating to the user associated with a similarity value (i.e., calculated variability) (Col. 2:31-34), wherein the variability is Gaussian (i.e., binomial distribution) (Col. 6: 48-50).

With regard to claims 38 and 55, Robinson discloses that the personality types are at least partially defined by vectors (i.e., $S = \{ \dots \}$), the vectors include attributes relating to the plurality of disparate users (Col. 8: 58).

With regard to claim 39, Robinson discloses the probabilities that the user has a personality type substantially similar to personality types of the plurality of disparate users are calculated at least partially by a frequency that the plurality of disparate users rate items according to the vectors (Col. 18:12-24).

With regard to claim 40, Robinson discloses a number of occurrences the disparate users rate items according to the vectors are explicitly counted (i.e., the number of movies they've both seen) (Col. 18: 3).

With regard to claims 41 and 43, and the feature determining at least one probability that a user has a personality type (i.e., preference for a particular item) similar to other users (as in claim 41), and predicting unknown attributes related to the user (as in claim 43), Robinson discloses determining similarity values "S" for a specific user, as compared with other users who have rated items that the specific user has rated, and also discloses determining projected ratings "Rp" that a

Art Unit: 3714

user might be expected to provide (Col. 2: 10-57; Col. 8:58 Equation 2; Col. 9: 48-57). While Robinson does not explicitly provide the equations as recited, however, Robinson does disclose that other algorithms may be used to calculate the similarity value "S", recommendation level "R_alpha", and projected rating levels "R_p" (Col. 19: 10-22).

Claim 42 recites that the probability that all of a specific user's preferences (R_a) will be equal to the all of the ratings provided by disparate users (R_i) is assumed to be $1/n$, where n is a number of the disparate users. So, as an example, if there are 5 disparate users, then the probability that all of a specific user's preferences will be the same as all the ratings provided by the other users is 1 in 5. For a higher number of disparate users, it is then less likely that a user's preferences will all be equal to all ratings provided by the disparate Users. For a smaller number of users, there is a higher probability that all of a user's preferences will mirror all of the preferences of the other users. Since this feature depends entirely on the preferences of the users, the invention of Robinson is inherently capable of this feature.

With regard to claims 44 and 57, Robinson discloses the personality generator employs a Bayesian network to calculate the probabilities that the user has a personality type substantially similar to personality types of the plurality of disparate users and employing a Bayesian network in connection with recommending the item to the user (Col. 8: 55-67; Col. 14:53 - Col. 15: 20).

With regard to claim 46-47, Robinson discloses implementing the invention with a server (Col. 4: 37-40), and a network (Col. 4: 7-17).

With regard to claim 49, Robinson discloses selectively requesting attributes from the user based upon a value of obtaining the information (i.e., similarity value) (Col. 6: 37-40).

With regard to claim 53, Robinson discloses one or more of the attributes being rating to items. (Col. 6: 37-40).

With regard to claim 54, Robinson discloses the items being one or more of video content, textual content, audio content, image content, multi-media content, a service, a consumer good, a business good, clothing, and a financial instrument. (Col. 8: 36-44).

8. Claims 35 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robinson (US Patent No. 5,884,282) in view of Altschuler et al. (US Patent No. 6,012,052) as applied to claims 34 and 48 above, and further in view of Knight et al. (US Patent No. 6,571,234)

With regard to claims 35 and 56, Robinson does not explicitly disclose the feature of a pruning facility employed to reduce a number of known attributes to consider when generating the personality types of the plurality of users.

Knight et al. teach the concept of pruning reduce a number of known attributes (i.e., unpopular categories of data) to consider when generating the personality types of a plurality of users (i.e., interests of its users) and thereby selectively reducing a number of attributes (Col. 25: 29-38).

It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the teaching of Knight et al. into the invention of Robinson in order to reduce clutter.

Response to Arguments

9. Applicant's arguments, see page 10, filed 02/23/2007, with respect to the rejection(s) of claim(s) 25, 48, and 58 under 35 U.S.C. 102 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Robinson and Altschuler, discussed above.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor Cheung whose telephone number is (571) 270-1349. The examiner can normally be reached on Mon-Fri, 9:00-5:00PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pezzuto can be reached on (571) 272-6996. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3714

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

VC

Victor Cheung
June 27, 2007



Robert Pezzuto
Supervisory Patent Examiner
Art Unit 3714